



# Investigation of Angiotensin-converting enzyme inhibitory potential and allergenicity of *Sesamum indicum* Linn seed proteins by an in silico approach (LB541)

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## Abstract

The nutraceutical role of dietary proteins and peptides is gaining considerable interest in the management of cardiovascular disease like hypertension. In order to investigate the contribution of *Sesamum indicum* seed proteins to its antihypertensive properties was investigated, there seed protein sequences: 7S globulin (NCBI accession number, gi|13183177), 2S albumin (NCBI accession number, gi|13183174) and 11S globulin (NCBI accession number, gi|13183172) were selected for BLAST, BIOPEP and allergenicity analysis. BLAST gave the following similarities: 7S globulin vs rice glutelin precursor (35%), 7S globulin vs oat 12S seed storage globulin 1 (29%), 11S globulin vs rice glutelin precursor (41%), 11S globulin vs oat 12S seed storage globulin 1 (39%) and 2S albumin vs

oat 12S seed storage globulin 1 (60%). BIOPEP analysis showed that the sesame proteins demonstrated either di- or tri-peptide with a total of 92, 91 and 34 potential ACE inhibitory peptides from 7S globulin, 2S albumin and 11S globulin, respectively. Papain hydrolysis theoretically released the highest numbers of predicted ACE inhibitory peptides (23, 14 and 5) from 7S globulin, 2S albumin and 11S globulin, respectively. The 8-mer and 80-mer allergenicity analysis of these proteins showed significant matches with allergenic proteins from *Lens culinaris*, *Anacardium occidentale*, *Carya illinoensis*. Although, the combined digestion with pepsin, trypsin and chymotrypsin A, a simulation of human gastrointestinal digestion, gave a sum of 32 predicted ACE inhibitory peptides from these proteins, their allergenic property may be a limitation.

## **We recommend**

1. [In silico Assessment of Antihypertensive Potential of Sweet Proteins \(LB542\)](#)

Solomon Rotimi et al., FASEB J, 2014

2. [In vitro inhibition of dipeptidyl peptidase IV by amaranth peptides](#)

Aida J. Velarde-Salcedo et al., FASEB J, 2013

3. [Soy peptides activate ldl-r: in vitro experiments and docking data](#)

Maria Rosa Lovati et al., FASEB J, 2010

4. [Comparative study of bioactive peptides released from in vitro digestion of human milk and infant formulas \(623.1\)](#)

Yasuaki Wada et al., FASEB J, 2014

5. [Molecular Modeling Studies: Potential Binding of Soy Protein 7S Globulin Subunits to Human LDL Receptor](#)

Ashkan Tafti et al., FASEB J, 2009

1. [MSACL 2015 Sees Continued Focus on Clinical Proteomics Calibration, Standardization Challenges](#)

GenomeWeb, 2015

2. [View from the Waterworks: The World of NCBI](#)

GenomeWeb, 2002

3. [Agilent Introduces Two Microarrays With a Novel Innovation: Bald Spots](#)

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4. [Hoping to Break Mass Spec Data Bottleneck, Proteomics Turns to Reconfigurable Hardware](#)

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5. [Downloads and Upgrades: NCBI Resource Pages and Updates to UCSC Genome Browser](#)

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